The highest winds of the month were reported as follows: On 7th, p. m., as low area No. II passed down the St. Lawrence Valley, Buffalo reported a wind of 72 miles an hour. On evening of 14th, as No. VI approached northeast, Buffalo again reported the highest wind of any station, 64 miles. On a. m. of 25th, as No. X passed into Nova Scotia, New York City experienced 64 miles. On p. m. of 26th, as No. XI passed down the St. Lawrence Valley, Buffalo reported 72 miles, and twenty-four hours later, when the storm reached the Gulf of St. Lawrence, New York City reported 64 miles. Finally, on evening of 28th, as low No. XII passed off the south Atlantic coast, it caused a wind of 60 miles an hour at Hatteras.—*H. A. Hazen, Professor.*

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	*29, a. m.	55	114	5, a. m.	32	79	3,090	7.0	441	18.4
II	3, p. m.	47	113	6, p. m.	47	62	2,580	3.0	860	35.8
III	5, a. m.	47	116	9, p. m.	36	76	2,850	4.0	712	29.7
IV	8, a. m.	51	101	13, p. m.	46	63	1,900	5.5	346	14.4
V	13, p. m	41	117	17, a. m.	48	55	3,660	3.5	1,046	43.6
VI	15, a. m.	51	109	21, a. m.	32	80	2,460	6.0	410	17.1
VII	20, p. m.	39	112	24, p. m.	46	56	3,480	4.0	870	36.2
VIII	24, a. m.	49	103	26, a. m.	34	75	2,160	2.0	1,080	45.0
IX	25, p. m.	52	109	28, a. m.	28	97	1,800	2.5	720	30.0
X	27, p. m.	54	108	30, p. m.	33	75	2,700	3.0	900	37.5
Total							26,680	40.5	1,385	307.7
Mean of 10 paths							2,668		738	30.8
Mean of 40.5 days									659	27.5
Low areas.										
I	2, a. m.	47	126	5, p. m.	48	52	3,420	3.5	977	40.7
II	4, p. m.	28	101	7, p. m.	49	55	2,850	3.0	950	39.6
III	7, a. m.	54	112	9, a. m.	47	54	2,880	2.0	1,440	60.0
IV	7, p. m.	32	114	10, p. m.	30	89	1,560	3.0	520	21.7
V	9, p. m.	49	127	13, p. m.	50	94	1,530	4.0	382	15.9
VI	12, p. m.	32	99	15, p. m.	47	55	2,490	3.0	830	34.6
VII	15, a. m.	49	92	18, a. m.	48	56	1,740	3.0	580	24.2
VIII	19, p. m.	55	113	22, p. m.	49	53	2,790	3.0	930	38 8
IX	20, p. m	53	116	24, p. m.	50	65	3,300	4.0	825	34.4
X	23, a. m.	33	96	25, p. m.	48	51	2,460	2.5	984	41.0
XI	23, p. m.	52	114	27, p. m.	50	54	2,850	4.0	712	29.7
XII	26, p. m.	27	99	28, p. m.	36	75	1,620	2.0	810	33.8
XIII	27, a. m.	52	98	29, p. m.	47	52	2,040	2.5	816	34.0
XIV	29, a. m.	34	115	† 1, p. m.	45	53	3,720	3.5	1,063	44.3
Total							35,250	43.0	11,819	492.7
Mean of 14 paths							2,518		844	35.2
Mean of 43.0 days									820	34.2

*December. †February.

RIVERS AND FLOODS.

At the close of December, 1898, the Missouri River was frozen over to below Omaha, and continued so throughout the month of January, 1899. From St. Joseph, Mo., to the mouth of the Missouri the water fell steadily owing to the advance of the cold weather, and on the 31st, the river was practically closed as far as Hermann, Mo., 75 miles above the mouth.

The Mississippi was also frozen over as far south as Hannibal, and fell steadily in the open portion from below Hannibal to Cairo.

In the Ohio a rise began in the upper river on the 14th, reaching Cairo on the 19th, but no extremely high stages were reached, except at Evansville where the river was above the danger line from the 14th to the 23d, inclusive, reaching 39.1 feet on the 18th, or 4.1 feet above the danger line. Lowlands were submerged after the 12th, but aside from the temporary inconvenience to the farmers, no loss or damage resulted.

Previous to this rise, however, there had been another marked, though not prolonged, rise in the Ohio and its tributaries on account of the substantial rains of the 4th, 5th, and 6th. In the Cumberland River stages from the danger lines to more than 8 feet above were general, but no reports of damage were received. In the Tennessee River at Johnsonville the water was from 1 to 3 feet above the danger line from the 10th to the 15th, inclusive. In the Emory River above Kingston, Tenn., a log boom broke on the 7th during a heavy rise in the mountain streams, and 1,000,000 feet of logs were swept away. At Chattanooga there was heavy drift from the 7th to the 10th, becoming lighter and ending on the 11th.

In the Mississippi River below Cairo the rise was steady after the 9th, cresting at Memphis on the 22d, and was still in progress at the close of the month from Vicksburg southward. A considerable volume of water also came out of the Yazoo River, which rose steadily after the 4th of the month.

The Ouachita at Camden, Ark., reached the danger line of 39 feet on the 18th, and fell rapidly thereafter. At Monroe, La., there was a steady rise after the 4th, but no high stages were reached.

A similar condition of affairs prevailed along the Red River.

The Atchafalaya rose steadily at the rate of about 0.5 foot per day from the beginning to the end of the month, reaching the danger line on the last day.

Low stages prevailed generally in the Susquehanna, except in the vicinity of Wilkesbarre. In the Wyoming Valley the rains from the 4th to the 7th caused the breaking of the ice gorge, and a rise of 15 feet in the river in four days, the water reaching a stage of 21 feet on the 7th, or 7 feet above the danger line, when the gorge broke. It remained above the danger line until the 20th. Many cellars in the lower end of the city were flooded, and some water came into the main portion. Interurban traffic was almost completely interrupted while the water was at its highest stage.

The James River at Richmond reached the flood stage on the 7th, and read 13.5 feet on the gauge on the 8th, or 1.5 foot above the danger line. This rise was due to the heavy rains of the 5th and 6th, and warnings were given as soon as reports from the upper river were received. A stage of 12 feet was forecast for 8 p. m. of the 7th, and the stage actually reached at that hour was 12.2 feet, a remarkably accurate forecast. Supplementary warnings were issued later of a 13-foot stage to arrive during the night. Some cellars were flooded, and there was some interruption of street car traffic. No damage to property was reported by transportation companies, all portable articles having been moved to places of safety after the warnings were received.

Nothing further of interest was noted in connection with river stages, except in Alabama, where, owing to heavy rains, the Black Warrior River at Tuscaloosa rose 44.6 feet in the three days from the 5th to the 8th, reaching a stage on the latter date of 49.3 feet, 11.3 feet above the danger line. Warnings of a 48-foot stage were issued at 8 a. m. of the 7th, another instance of remarkably accurate forecasting. At Demopolis there was also a rapid rise, the danger line of 35 feet having been reached on the 9th, and a crest of 47.6 feet on the 17th. No damage of consequence resulted from the rise.

Ice was present quite generally north and east of Cairo, and was sufficiently heavy at Cairo on the 1st of the month to impede ferryboat traffic. At Hannibal, Mo., the ice gorge above the Wabash bridge moved out on the 26th.

In the East ice was reported as far south as Lynchburg, where it was 1 inch thick on the 22d.

The rivers of central and eastern Pennsylvania were mostly frozen during the greater portion of the month, and ice 14 inches in thickness was reported at various places.

In the Hudson River 10-inch ice was harvested at Albany on the 4th. On the 6th the ice moved out and gorged south of the city, the river rising as a consequence to 7 inches above the top of the dock.

By noting the southward movement of the line of total freezing and the increasing thickness of the ice in the rivers, the general advance of the winter season can perhaps be more readily observed than in any other manner. The following table, compiled mostly from data taken from the weekly snow and ice charts, shows these conditions as they existed at the end of each week, beginning with December 5, 1898. The thickness of the ice is measured in the rivers and harbors each Monday evening by means of augers and measuring rods especially constructed for the purpose. A long-handled auger bores a hole through the ice, and the measuring rod gives its thickness in inches and tenths of inches, the rod being provided with a bend at its lower end to clamp the ice on the under side, thus insuring an exact measurement.

Thickness of ice in rivers (in inches), winter of 1898–99.

Stations.	December 5.	December 12.	December 19.	December 26.	January 2.	January 9.	January 16.	January 23.	January 30.
St. Paul, Minn	10.0	14.0	16.0	18.0	22.0	23.5	22.5	22.5	24.5
La Crosse, Wis	6.5	*	13.0	14.0	15.0	20.0	22.0	19.0	26.0
Dubuque, Iowa	8.0	10.0	11.0	10.0	14.0	15.0	13.0	10.0	18.0
Davenport, Iowa	.....	1.0	11.0	11.0	12.5	14.0	13.0	12.0	14.0
Keokuk, Iowa	.....	7.0	8.5	10.0	14.0	13.0	12.0	11.0	13.0
Hannibal, Mo	.....	7.0	9.0	6.0	*	11.0	.....	.....	5.0
Williston, N. Dak	12.0	12.0	12.0	12.0	16.0	18.0	20.0	20.0	21.0
Bismarck, N. Dak	10.0	16.0	18.0	18.0	20.0	20.0	24.0	24.0	*
Pierre, S. Dak	11.0	14.0	14.5	15.0	17.0	19.5	19.0	17.5	20.0
Yankton, S. Dak	8.0	11.5	15.5	15.5	16.0	16.0	16.0	16.0	18.5
Sioux City, Iowa	8.5	12.0	12.0	11.0	15.0	16.5	17.5	16.5	18.0
Omaha, Nebr	6.0	8.0	10.0	10.0	*	12.0	*	6.0	10.0
Topeka, Kans	....	2.5	3.0	2.5	4.0	.....	.....	.....	3.5
Kansas City, Mo	.....	.....	.....	.....	.....	.....	.....	.....	3.0
Columbus, Ohio	.....	3.0	3.0	5.0	0.5	2.5	.....	.....	4.0
Wichita, Kans	.....	3.0	.....	.....	.....	.....	.....	.....	4.0
Moorhead, Minn	13.5	15.0	18.0	20.0	24.0	26.0	26.0	26.0	28.0
Albany, N. Y	.....	.....	5.0	3.0	6.5	1.0	6.0	8.0	10.0

* Missing.

The highest and lowest water, mean stage, and monthly range at 118 river stations are given in the accompanying table. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are: Keokuk, St. Louis, Cairo, Memphis, and Vicksburg, on the Mississippi; Cincinnati, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—*H. C. Frankenfield, Forecast Official.*

Heights of rivers referred to zeros of gauges, January, 1899.

Stations.	Distance to mouth of river.	Danger line on gauge.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.		
Mississippi River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
St. Paul, Minn	1,957	14	Frozen	.....	.....	.....	.....	.....
Reads Landing, Minn	1,887	12	0.3	1	—0.5	21-23	0.2	0.8
Red Wing, Minn	.....	.....	.....	.....	.....	.....	.....	.....
La Crosse, Wis	1,822	12	Frozen	.....	.....	.....	.....	.....
North McGregor, Iowa	1,762	18	2.1	19	1.3	31	1.8	0.8
Dubuque, Iowa	1,702	15	Frozen	.....	.....	.....	.....	.....
Leclaire, Iowa	1,612	10	.....	.....	.....	.....	.....	.....
Davenport, Iowa	1,596	15	Frozen	.....	.....	.....	.....	.....
Galland, Iowa	1,475	8	Frozen	.....	.....	.....	.....	.....
Keokuk, Iowa	1,466	14	Frozen	.....	.....	.....	.....	.....
Hannibal, Mo	1,405	17	2.2	4	—1.3	29	0.7	3.5
Grafton, Ill	1,307	23	4.3	16	1.2	31	3.7	3.1
St. Louis, Mo	1,264	30	6.7	1	1.1	31	4.4	5.6
Chester, Ill	1,189	30	4 8	1	0.9	31	2.7	3.9
Cairo, Ill	1,073	45	38.3	19,20	20.0	7	30.9	18.3
Memphis, Tenn	843	33	29.0	22-24	13.3	9	22.4	15.7
Helena, Ark	767	42	38.6	25,26	20.8	1,8	20.2	17.8
Arkansas City, Ark	635	42	40.6	29,30	21.2	1	31.3	19.4
Greenville, Miss	595	42	34.8	29,30	16.6	1	26.2	18.2
Vicksburg, Miss	474	45	39.6	31	15.2	1	28.9	24.4
New Orleans, La	108	16	14.1	31	4.3	1	9.8	9.8
Arkansas River.								
Wichita, Kans	720	10	1.9	26	1.5	19	1.7	0.4
Fort Smith, Ark	345	22	8.2	16	4.4	31	5.7	3.8
Dardanelle, Ark	250	21	9.5	14,15	4.5	30,31	6.4	5.0
Little Rock, Ark	170	23	14.8	14	6.4	31	9.7	8.4

Heights of rivers above zeros of gauges—Continued.

Stations.	Distance to mouth of river.	Danger line on gauge.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.		
White River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
Newport, Ark	150	26	22.7	17	5.7	4	14.8	17.0
Des Moines River.								
Des Moines, Iowa ¶	150	19	2.8	23	2.1	11-13,16	2.3	0.7
Illinois River.								
Peoria, Ill	135	14	9.3	22,23	7.5	1	8.6	1.8
Missouri River.								
Bismarck, N. Dak	1,201	14	3.9	12,13	3.0	17-25	3.4	0.9
Pierre, S. Dak	1,006	14	Frozen	.....	.....	.....	.....	.....
Sioux City, Iowa	676	19	Frozen	.....	.....	.....	.....	.....
Omaha, Nebr	561	18	Frozen	.....	.....	.....	.....	.....
St. Joseph, Mo	373	10	1.3	8	— 0.9	29	0.3	2.2
Kansas City, Mo. ‖	280	21	7.7	4	5.4	20	6.5	2.3
Boonville, Mo	191	20	5.5	5	3.7	3,29	4.5	1.8
Hermann, Mo. ‖	95	24	6.7	1	3.4	30	4.4	3.3
Ohio River.								
Pittsburg, Pa	966	22	16.5	26	3.3	31	8.8	13.2
Davis Island Dam, Pa	960	25	15.6	8,16	5.4	31	9.7	10.2
Wheeling, W. Va	875	36	24.3	16	7.6	31	12.9	16.7
Parkersburg, W. Va	785	36	26.6	18	8.9	1	15.4	17.7
Point Pleasant, W. Va	703	39	31.0	18	10.7	2,3	20.4	20.3
Catlettsburg, Ky	651	50	40.5	8	14.0	1	26.1	26.5
Portsmouth, Ohio	612	50	40.2	9	15.8	3	27.7	24.4
Cincinnati, Ohio	499	50	41.8	15,16	19.0	4	31.8	22.8
Louisville, Ky	367	28	22.4	16	8.7	4	13.6	13.7
Evansville, Ind	184	35	39.1	18	17.4	15	29.8	21.7
Paducah, Ky	47	40	36.6	18	14.1	6	28.3	22.5
Allegheny River.								
Warren, Pa	177	7	6.3	6	1.2	31	3.4	5.1
Oil City, Pa	128	13	7.2	6	2.0	31	3.8	5.2
Parkers Landing, Pa	73	20	8.5	16	1.6	31	4.2	6.9
Freeport, Pa	26	20	14.2	7	3.5	31	7.6	10.7
Conemaugh River.								
Johnstown, Pa	64	7	4.8	15	2.1	13,22,31	2.6	2.7
Red Bank Creek.								
Brookville, Pa	35	8	2.4	15	0.7	24-31	1.1	1.7
Beaver River.								
Ellwood Junction, Pa	10	14	6.9	15	1.2	1-3	2.2	5.7
Cumberland River.								
Burnside, Ky	434	50	52.4	7	5.3	24	14.1	47.1
Carthage, Tenn	257	30	38.6	9	5.2	1	17.4	33.4
Nashville, Tenn	175	40	39.9	14	7.4	1	22.3	32.5
Great Kanawha River.								
Charleston, W. Va	61	30	24.7	7	4.6	3	8.2	20.1
New River.								
Hinton, W. Va	95	14	6.6	7	2.5	4	3.4	4.1
Licking River.								
Falmouth, Ky	30	25	21.8	14	4.0	1,2,23	8.8	17.8
Miami River.								
Dayton, Ohio	69	18	10.5	15	2.3	3	3.8	8.2
Monongahela River.								
Weston, W. Va	161	18	10.0	6	0.0	22-24, 30,31	1.7	10.0
Fairmont, W. Va	119	25	20.3	7	1.6	2,3	4.9	18.7
Greensboro, Pa. ‖	81	18	22.0	7	8.0	1,3	10.5	14.0
Lock No. 4, Pa	40	28	23.5	7	7.8	3	12.1	15.7
Cheat River.								
Rowlesburg, W. Va. ‖	36	14	7.0	7	3.0	3,4,22-24	4.3	4.0
Youghiogheny River.								
Confluence, Pa	59	10	8.5	15	1.6	3	4.1	6.9
West Newton, Pa	15	23	10.0	15	1.5	1	3.6	8.5
Muskingum River.								
Zanesville, Ohio	70	20	20.0	16	6.8	31	11.9	13.2
Tennessee River.								
Kingston, Tenn	534	25	12.9	7	1.3	31	4.6	11.6
Chattanooga, Tenn	430	33	18.8	8,9	4.7	1	8.1	14.1
Bridgeport, Ala	390	24	15.0	9	2.7	1,2	6.3	12.3
Florence, Ala	220	16	14.2	9	2.9	4	7.2	11.3
Johnsonville, Tenn	94	21	23.9	14	5.1	4	13.3	18.8
Clinch River.								
Speers Ferry, Va	156	20	8.7	7	0.4	30,31	1.9	8.3
Clinton, Tenn	46	25	21.5	8	5.6	31	9.4	15.9
Wabash River.								
Mount Carmel, Ill	50	15	19.5	23	5.4	2	12.3	14.1
Red River.								
Arthur City, Tex	688	27	.....	.....	.....	.....	.....	.....
Fulton, Ark	565	28	23.7	17	4.5	5	12.0	18.2
Shreveport, La	449	29	15.7	25	3.6	8	10.2	12.1
Alexandria, La	139	33	18.2	27	6.0	5	13.3	12.2
Atchafalaya Bayou.								
Melville, La	100*	31	31.0	31	16.7	1	26.3	14.3
Ouachita River.								
Camden, Ark	340	39	39.1	18	5.9	4	21.3	33.2
Monroe, La	100	40	31.3	31	8.4	4	21.2	22.9
Yazoo River.								
Yazoo City, Miss	80	25	19.8	31	3.5	4	15.0	15.3
Albany, Ga	80	20	18.8	18	6.4	3,4	11.8	12.4
Cape Fear River.								
Fayetteville, N. C	100	38	23.6	16	4.5	1	9.9	19.1
Columbia River.								
Umatilla, Oreg	270	25	5.3	23	— 0.5	5	1.5	5.8
The Dalles, Oreg	166	40	7.1	30	1.1	9,10	3.9	6.0
Willamette River.								
Albany, Oreg	99	20	16.6	22	6.0	31	9.8	10.6
Portland, Oreg	10	15	14.1	22	2.8	7,8	7.7	11.3
Edisto River.								
Edisto, S. C	75	6	5.5	19-21	3.7	9,10	4.6	1.8
James River.								
Lynchburg, Va	257	18	8.6	7	1.2	5	2.6	7.4
Richmond, Va	110	12	13.5	8	0.9	1,4,29,30	2.4	12.6
Alabama River.								
Montgomery, Ala	265	35	18.0	13	5.0	1,4	9.5	13.0
Selma, Ala	212	35	21.9	14	5.8	6	11.6	16.1

Heights of rivers above zeros of gauges—Continued.

Stations.	Distance to mouth of river.	Danger line on gauge.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.		
Coosa River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
Rome, Ga	225	30	5.9	8,9	2.6	5,6	3.7	3.3
Gadsden, Ala	144	18	6.5	10,11	2.7	1,2	4.5	3.8
Tombigbee River.								
Columbus, Miss.	285	33	21.8	11	0.1	2	8.8	21.7
Demopolis, Ala	155	35	47.6	17	3.9	2	31.5	43.7
Black Warrior River.								
Tuscaloosa, Ala	90	38	49.3	8	4.4	1	20.8	44.9
Pedee River.								
Cheraw, S. C.	145	27	27.8	9	2.0	2	9.2	25.8
Black River.								
Kingstree, S. C	60	12	9.9	24,25	6.9	13,14	8.4	3.0
Lumber River.								
Fairbluff, N. C.	10	6	5.7	22	3.2	11	4.5	2.5
Lynch Creek.								
Effingham, S. C.	35	12	12.4	22	4.3	11	8.1	8.1
Potomac River.								
Harpers Ferry, W. Va.	170	16	6.8	7	3.0	31	4.7	3.8
Roanoke River.								
Clarksville, Va.	155	12	13.7	9	1.5	31	3.8	12.2
Sacramento River.								
Red Bluff, Cal.	241	23	13.5	16	0.4	1,5	4.6	13.1
Sacramento, Cal.	70	25	16.6	22	8.2	1	13.2	8.4

Heights of rivers above zeros of gauges—Continued.

Stations.	Distance to mouth of river.	Danger line on gauge.	Highest water.		Lowest water.		Mean stage.	Monthly range.
			Height.	Date.	Height.	Date.		
Santee River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
St. Stephens, S. C.	50	12	9.3	21-23	6.4	9	8.0	2.9
Congaree River.								
Columbia, S. C.	37	15	8.5	8	0.6	1,6	2.6	7.9
Wateree River.								
Camden, S. C.	45	24	23.8	8	5.5	2	10.8	18.3
Savannah River.								
Augusta, Ga.	130	32	22.9	8	8.5	6	12.7	14.4
Susquehanna River.								
Wilkesbarre, Pa.	178	14	21.0	7	4.5	1,2	11.7	16.5
Harrisburg, Pa.	70	17	8.0	7	2.9	3	4.4	5.1
Juniata River.								
Huntingdon, Pa.	80	24	5.5	25	4.0	1-4	4.7	1.5
W. Br. of Susquehanna.								
Williamsport, Pa.	35	20	8.0	7	3.0	31	4.5	5.0
Waccamaw River.								
Conway, S. C.	40	7	5.3	31	2.3	10	3.6	3.0

• Distance to Gulf of Mexico. † Record for 25 days. ‡ Record for 26 days.
§ Record for 27 days. ‖ Record for 30 days. ¶ Record for 23 days.

THE WEATHER OF THE MONTH.

By ALFRED J. HENRY, Chief of Division of Records and Meteorological Data.

General remarks.—The weather of January, 1899, was fairly typical of midwinter conditions. The atmospheric circulation was vigorous, and the alternations from fair to stormy weather were sharp and more decided than during the preceding month.

The distinguishing characteristics of the month were perhaps the distribution and frequency of highs and lows, as shown in detail in the preceding section, and the sharp fall in mean pressure over the Rocky Mountain and Plateau regions.

From the 26th to the end of the month there was a succession of cold waves with high winds and snow throughout the Rocky Mountain region and a portion of the plains eastward to the Mississippi Valley. As the month closed a cold wave was moving southward and eastward to the line of zero temperature, extending from northwestern Texas to central Ohio.

While the stormy conditions above mentioned were prevailing in the Rocky Mountain region, midsummer weather was being experienced in California. Temperatures at midday, ranging from 70° to 80°, were observed in the Great Valley and southern California. At San Francisco a maximum temperature of 78° was registered on the 26th, the highest January maximum recorded during the past twenty-seven years.

PRESSURE AND WIND.

The character of the weather on the Pacific coast is largely determined by the pressure distribution, both in that region and farther to the eastward. During the preceding month pressure was unusually high over the Plateau region, and the course of the north Pacific lows was so far to the northeastward that scarcely any rain fell in California where droughty conditions had prevailed since October. Fortunately for the great agricultural and commercial interests of that State, this condition of affairs came to an end on January 1, 1899, when a vigorous north Pacific low caused general rains throughout the State. The snow covering on the mountains, hitherto scanty indeed, was considerably increased, and the outlook of previous weeks was much improved. Other lows approached from the west, and the rains came in generous proportions until the 20th, after which date substantially no rain fell in California and but little elsewhere on the Pacific coast. The weather on the coast during this period was dominated by a succession of highs that apparently moved inland from the Pacific. The lows, on the other hand, to whose influence precipitation on the coast is due, had their origin in Alberta, moving thence southeastward, but at such a distance as to exert no influence upon the weather of the coast.

East of the Rocky Mountains there was the usual alternation from warm and pleasant, to cold and stormy, weather.

The number of lows that originated in Texas and on the Gulf coast was greater than usual, and as a result there was generous rainfall in the Gulf States, Florida, the middle Mississippi Valley, and the Ohio Valley and Tennessee. In the first-named States farm work was much retarded by reason of the excess of rain.

TEMPERATURE OF THE AIR.

The departures of temperature were not very marked in any section. The greatest positive departures were observed throughout an irregular area extending from Kansas City to the headwaters of the Missouri River, thence westerly and southwesterly to include northern Wyoming, Utah, and Nevada, eastern Oregon and Washington, and practically all of Idaho. The negative departures were generally small. No especially severe cold waves occurred. Cold weather and snow were experienced on the Atlantic seaboard on the 1st. The next general period of cold weather fell on the 5th, 6th, and 7th, and zero temperatures were registered in New England and eastern New York on the 8th and 9th. A moderate cold wave moved from the northwest to New England by way of the Lake region on the 17th, 18th, and 19th, and, as stated under "general remarks," a succession of cold waves with snow and zero temperatures moved southward over the Rocky Mountain and Plains regions from the 26th to the close of the month.

The distribution of the observed monthly mean temperature of the air is shown by red lines (isotherms) on Chart VI. This chart also shows the maximum and the minimum temperatures, the former by black and the latter by dotted lines.